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NEW BRACKISH WATER MOLLUSKS FROM LOUISIANA

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In the course of continuing research on the brackish water mollusks of southeastern United States, the following forms were found to be new. The unstinted cooperation of the late Percy Viosca, Jr., as well as that of his assistants and superiors of the Louisiana Wild Life and Fisheries Commission has materially increased our knowledge of the fauna living in the waters of the Mississippi Delta region.

GASTROPODA

Family Hydrobiidae Troschel, 1857

Subfamily Hydrobiinae, *s. s.* Morrison (emend.) 1949

Vioscalba, new genus

Shell subcylindric or pupiform; apex obtuse; constricted aperture evenly elliptic inside thickened lip. Operculum corneous, paucispiral. Animal with male organ large, originating dorsally, traversed only by vas deferens, and ornamented with only one rounded lobe on left (anterior) side.

Type-species: *Vioscalba louisianae*, new species.

At first sight these shells recall the Asiatic genus *Stenothyra*, which belongs to the family Rissoidae. They differ from *Stenothyra* by possessing a conspicuous varix behind the lip, which projects laterally, increasing the shell diameter. Although shells of *Vioscalba* are markedly similar to (but smaller and more slender than) those of known species of *Notogillia*, the relatively simple male organs of *Vioscalba* will distinguish this new genus.

Vioscalba louisianae, new species

(Figs. 1, 2)

Shell small, elongate–ovate, polished, translucent, of 4½ slightly convex whorls, separated by distinct but very shallow suture, microscopically spirally striate, and with minute growth lines. Spire narrowly obtuse, first 3 whorls rapidly increasing, last whorl deflected, increasing rapidly only in height, almost three-fourths shell height, and abruptly constricted

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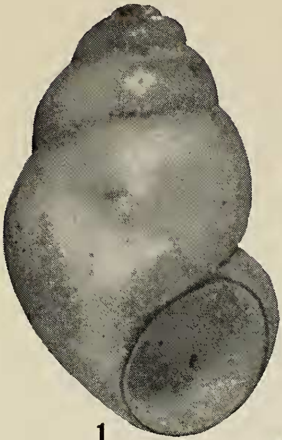

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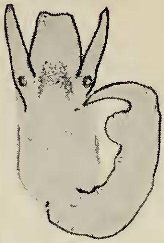

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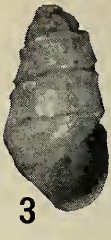

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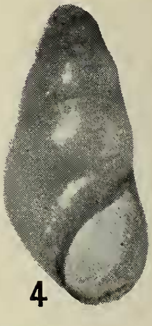

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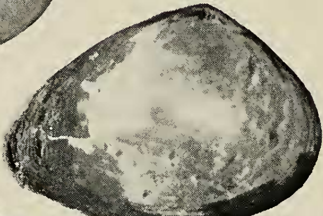

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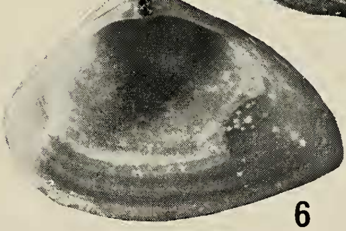

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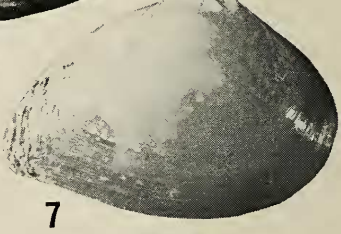

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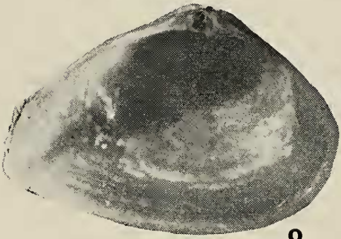

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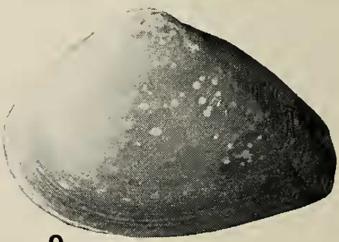

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Fig. 1. *Vioscalba louisianae* Morrison, holotype USNM no. 635627, from off Frenier Beach, Lake Pontchartrain, Louisiana.

Fig. 2. *Vioscalba louisianae* Morrison, sketch of head and male organ of paratype, USNM no. 635629, from off Goose Point, Lake Pontchartrain, Louisiana.

at aperture. Entire shell thus appears somewhat subcylindrical or pupiform. Abrupt (downward) constriction of last whorl at aperture causes heavy variciform thickening of lip to appear to fill upper angle of whorl, producing in mature shells an almost evenly elliptic peritreme, not angled above. Aperture entire, somewhat oblique; umbilicus a very narrow but distinct slit, continued upward above very briefly solute lip.

Operculum thin, corneous, paucispiral, of about 2½ turns.

Animal of normal hydrobiine type, with snout and tentacles of moderate length. Prominent eyes in outer bases of tentacles. Male organ large, situated well back dorsally, and relatively simple. Only one rounded lobe on left (anterior) side of distal half. Distal third (functional tip) of verge regularly tapered to point. Pigmentation of entire animal, especially of verge, very light. In life, animal nearly all milk-white in appearance. Only evident pigment is greyish area on snout and head, between eyes.

The holotype, USNM no. 635627, was dredged from sandy mud bottom off Frenier Beach, in the southwestern part of Lake Pontchartrain on 5 November 1959 by the late Percy Viosca, Jr., and the writer. It measures: height 3.3 mm; diameter 2.2 mm; aperture height 1.2 mm; aperture diameter 1. 1 mm. An estimated thousand paratypes, USNM no. 635628, from the same dredging sample range in size from 2.7 to 3.6 mm in height, and from 1.7 to 2.4 mm in diameter. As is usual in many species of the Hydrobiinae, the males are apparently of smaller average size. Approximately another thousand specimens are included in more than twenty-five additional paratype lots in the U. S. National Museum collection, collected by Viosca and by the writer. The numerous specimens seen to date have amply proven this species distinct from all others.

Shells of this species were found in the crops of ducks a half century before they were discovered living in Lakes Pontchartrain and Borgne by Mr. Viosca. They occur in countless numbers in those lakes. Dead shells dredged from the east side of the Mississippi delta south of Hopedale, Louisiana, and in Heron Bay, Mississippi, indicate that this snail lives in those localities also.

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FIG. 3. *Odostomia weberi* Morrison, holotype, USNM no. 635638, from bay north of Bayou Chene Fleur, Barataria Bay, Louisiana.

FIG. 4. *Odostomia barretti* Morrison, holotype, USNM no. 635630, from Heron Bay, Mississippi.

FIG. 5. *Mulinia pontchartrainensis* Morrison, older, eroded paratype, USNM no. 635645, from off Frenier Beach, Lake Pontchartrain, Louisiana.

FIGS. 6–9. *Mulinia pontchartrainensis* Morrison, holotype, USNM no. 635643, from Middle Ground, Lake Pontchartrain, Louisiana.

The present species is very close to, but is not identical to the one described by Pilsbry as *Probythinella protera* from the Pliocene of Tampa Bay, Florida (1953 Acad. Nat. Sci. Phila., Monogr. 8; 444, Pl. 64, Fig. 6). This second species of *Vioscalba, V. protera,* has a more abruptly truncated spire. The body whorl and the penultimate whorl of *protera* are flatter toward the suture; in contrast, all whorls of *louisianae* are more regularly rounded from suture to suture. The shells of *louisianae* appear markedly more obese than the specimens of *protera* seen.

Family PYRAMIDELLIDAE

Genus Odostomia Fleming, 1813

Odostomia barretti, new species

(Fig. 4)

Shell minute, slender, imperforate, ovate–conic, vitreous, of about 5½ whorls. Flat-sided whorls separated by linear almost unimpressed suture. Apex subtruncate; nuclear whorl rounded, with dividing suture moderately incised. After first two whorls, suture impression disappears, with extreme flattening of whorls. Sculpture smooth, glossy, with minute growth striae only that slant forward at suture. Aperture generally oval; columellar and parietal walls at a slight angle to each other, posterior angle distinctly narrowed. Lip very slightly thickened within, but in no way reflected.

Operculum corneous, paucispiral.

The animal has not been examined; this species is allocated to *Odostomia* on the basis of shell characters.

The holotype, USNM no. 635630, measures: height 2.1 mm, diameter 1.0 mm, aperture height 0.8 mm, aperture diameter 0.5 mm. It and 24 paratypes, USNM no. 635631, were dredged from algae-covered mud bottom in about 4 ft of water in the northeast corner of Heron Bay, Mississippi. Additional paratypes, USNM no. 635632, were dredged from mud bottom in 8 ft of water near the mouth of Heron Bay. The species has been found off Bayou Thomas, in Lake Borgne, USNM no. 635633, and from three stations in the eastern part of Lake Pontchartrain, USNM no. 635634, 635635, and 635636. It is also living in Oyster Bay, south of Hopedale, Louisiana, USNM no. 635637.

This minute species is named for Ronny Barrett, former research assistant to Viosca. These snails were discovered living in the company of *Texadina sphinctostoma.* They are easily differentiated from the *Texadina* shells because they are more slender, glassy smooth, with extremely flat-sided whorls, and usually much smaller. A few larger shells of this species resemble in a general way *Odostomia caloosaensis* Dall, but they are thinner. The tiny translucent species *barretti* is smaller than any other Louisiana member of the group known to me except the following, in which the adult is even more minute.

Odostomia weberi, new species
(Fig. 3)

Shell minute, imperforate, cylindro-conic, vitreous-white, with about three whorls remaining. Apex and early whorls eroded, not seen in any immature and adult shells at hand. Whorls pinched into a keel at periphery; peripheral keel, most prominent on early whorls, may be partially obsolete just behind aperture. A second strong keel a little below suture. In between, posterior or spire slope of whorls flat, ornamented only by micro-spiral striations and microscopic growth lines. Suture strikingly like a plowed furrow with narrow but distinct raised ridges bounding open furrow of even width and depth between all remaining whorls. Aperture regularly ovate, angled posteriorly; columellar wall thickened internally, but peristome not reflected in any way.

Operculum thin, corneous, paucispiral, of about 2 rapidly increasing turns.

The animal of this minute species has not been examined. Allocation of the species to *Odostomia* is made on the basis of shell characters.

The holotype, USNM no. 635638, was dredged from muddy bottom in about 4 ft of water in the small bay north of Bayou Chene Fleur, northern part of Barataria Bay, Louisiana, 10 November 1959. The holotype has 3 whorls remaining and measures: height 1.4 mm; diameter 0.7 mm; aperture height 0.5 mm; aperture diameter 0.3 mm. Twenty five paratypes, USNM no. 635639, are from the same source. The maximum size of the paratypes is about 1.7 mm in length and 0.8 mm in diameter. Twenty two additional paratypes, USNM no. 635640, were dredged from mud and shell bottom, off Hamilton's Oyster Camp, in Bayou Chene Fleur. One specimen, USNM no. 635641, was dredged in Sugar House Bend; one live one, and an empty shell were dredged from the mud and plant debris on the bottom of the Grand Terre Canal, proving it also lives on the south side of Barataria Bay. Its presence on the east side of the Mississippi delta is indicated by the finding of shells, USNM no. 635642, in Oyster Bay, south of Hopedale.

The small size of these minute adult snails may partly explain why they have not been seen before. They were actually discovered in the residue of the dredge washings. They are so small that almost all of them are washed through a 20 mesh-to-the-inch, monel wire screen. The true abundance or even the presence of this species in a locality must be checked in the field by the use of screens of even finer mesh.

These tiny shells resemble the uppermost three whorls of such forms as *Orinella locklini*, but with the suture bordered above and below by strong keels, instead of the simple wide suture of that Tampa Bay, Florida, species. *Odostomia weberi* is named in honor of the late Jay A. Weber of Miami, Florida, who first stimulated my interest in Louisiana mollusks more than a decade ago.

PELECYPODA

Family Mactridae

Genus Mulinia Gray, 1837

Mulinia pontchartrainensis, new species

(Figs. 5–9)

Shell small, markedly trigonal, equivalve, compressed; umbones low, persistently adjacent, smooth; posterior ridge low, somewhat biangulate, ending at postbasal point. Shell porcelaneous, externally chalky when eroded, with a thin epidermis most evident on posterior ridge; anterior end rounded, slightly shorter than produced or rostrate posterior end. Hinge with inverted V-shaped cardinal tooth in left valve over which fit the two divergent lamellar cardinals of right valve; accessory lamella is present in left valve, forming anterior edge of cartilage pit; single anterior and posterior lateral teeth in left valve lock between paired less prominent anterior and posterior laterals of right valve. Laterals smooth and short, not quite reaching anterior and posterior adductor muscle scars. Adductor scars distinct, anterior smaller; pallial sinus inconspicuous, wide and very shallow. Hinge ligament and cartilage completely enclosed; internally finely granulate margin of shell continuous dorsally over pit. Ligament small, inserted on posterodorsal surface of pit; cartilage larger, inserted on ventral surface of pit, persistent, with lateral ends usually projecting externally from eroded umbones.

The holotype, USNM no. 635643, and approximately a thousand paratypes, USNM no. 635644, were dredged from the "Middle Ground" in the eastern part of Lake Pontchartrain, Louisiana, on 5 November 1959. The holotype measures: length 9.2 mm, height 6.3 mm, diameter 4.1 mm. A series of selected paratypes from this sample measure:

Length	Height	Diameter
9.0 mm	6.4 mm	4.0 mm
8.8	6.3	3.7
7.9	6.5	3.4
8.0	5.9	3.0
6.9	4.6	2.7
5.9	4.2	2.3
5.5	4.1	2.4
4.9	3.6	2.0
4.4	3.6	1.8

At the present time this species is known from Lakes Pontchartrain and Borgne, southward to below Pointe a la Hache and in the northern waters of Barataria Bay, Louisiana. In Mississippi it is recorded from Heron, St. Louis, and Back bays, and from Davis Bayou, east of Ocean Springs.

It has been dredged once from Mobile Bay. The extent of its occurrence and the degree of its abundance there is still in need of examination.

The shells of *pontchartrainensis* appear more compressed and trigonal in outline than the ovate juveniles of *Rangia cuneata* (Gray) in whose company they may be living. The ten specimens listed have an average length of 7.05 mm, with the height at 73.05% and the diameter at 41.7% of the length. Ten specimens of *Rangia cuneata* (juveniles of comparable size range) average 6.72 mm in length, with the height at 75.4% and the diameter at 48.11% of the length. There is too much individual variation for the mathematical separation by percent of diameter to be completely successful. Even in the smallest juveniles seen, the beaks of *cuneata* are markedly separate, in direct contrast to the adjacent beaks of *pontchartrainensis*.

This new species is usually more compressed, more trigonal, and always has a much heavier hinge plate than *Mulinia lateralis* (Say). The heavier, more compressed shells have much shallower beak cavities and lack the conspicuous pallial sinus that extends at least one-third of the ventral distance between the adductor muscle scars on the shells of *lateralis*. They are more compressed and trigonal in outline, with a shallower pallial sinus than *Mulinia harrisi* Smith from the Pliocene of Louisiana. They differ from *Mulinia sapotilla* Dall of the Caloosahatchie Pliocene by being smaller, thinner, and less rostrate posteriorly.

Long suspicious of the "juvenile *Rangia*" he knew were present in untold numbers in the Lake Pontchartrain bottoms, it remained for Percy Viosca to furnish the final proof that this is a distinct and separate species. His examination of living clams collected in November proved them to be sexually mature, prepared to reproduce the following spring (if that be the breeding season). Later observations and analyses of more than 30,000 paratypes included in approximately 80 lots now in the United States National Museum have effectively demonstrated that this species matures after one year's growth. These 10 mm adults may show old age characters (marked erosion of the shell) even though they are smaller than one-year-old juveniles of *Rangia cuneata*.